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TITLE : UBIQUINONE-CONTAINING SUPPLEMENT

ABSTRACT : PROBLEM TO BE SOLVED: To provide an economically advantageous supplement enabling effective ubiquinone (CoQ-10) intake into the human body, thus hopeful of ameliorating cardiopathy including congestive heart insufficiency and hepatopathy including hepatitis C.

SOLUTION: This supplement is obtained by incorporating 30-10 wt.% of ubiquinone into peanut oil so as to efficiently absorb the ubiquinone as a coenzyme into the human body.

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Ｆターム(参考)　4B018 LB10 LE02 MD07 MD15 MF08

(54)【発明の名称】　ユビキノン含有栄養補助食品

(57)【要約】
【課題】ユビキノン(CoQ-10)が効果的に体内に摂取でき、うっ血性心不全等の心臓疾患やC型肝炎等の肝臓疾患の改善が期待し得、かつ、経済的に有利な栄養補助食品を提供する。
【解決手段】補酵素であるユビキノンを効率よく体内に吸収するために、落花生油に、ユビキノンの30～10重量%を含有させた栄養補助食品である。

【特許請求の範囲】
【請求項１】落花生油にユビキノンの30～10重量％を含有させ、ユビキノンを効率よく体内に吸収させることを特徴とする栄養補助食品。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、ユビキノンを含有した栄養補助食品の技術分野に属する。
【０００２】
【従来の技術】ユビキノンは、青魚に多く含まれ人工合成によっても製造される強力な抗酸化物質であり、人工合成されたユビキノンである補酸素CoQ-10は、ユビデカレノンの薬品名で代謝性強心剤として認可されている。従来より、うっ血性心不全に効果があるとされるこのユビキノンを含む栄養補助食品としては、米糠油や大豆油にユビキノンを含有したものが知られている。
【０００３】
【発明が解決しようとする課題】しかしながら、従来の米糠油や大豆油にユビキノンを含有した栄養補助食品は、ユビキノン(CoQ-10)が高価であるため少量のユビキノンの配合でも高価にならざるを得ず、ユビキノン(CoQ-10)の摂取を十分取るには、経済的には有利ではなかった。本発明は、上記の問題点に鑑みてなされたもので、その課題は、ユビキノンを含有した栄養補助食品であって、ユビキノン(CoQ-10)の体内への吸収が早く、効果的に体内に摂取でき、うっ血性心不全等の心臓疾患やＣ型肝炎等の肝臓疾患の改善が期待し得、かつ、経済的に有利な栄養補助食品を提供することにある。
【０００４】
【課題を解決するための手段】上記の課題を解決するために、本発明は、落花生油にユビキノンの30～10重量％を含有させたことを特徴とする栄養補助食品である。その作用は、補酵素であるユビキノンを効率よく体内に吸収する。
【０００５】
【発明の実施の形態】本発明は、落花生油に配合したユビキノンの人体への吸収効率が、従来の他の糠油等に配合したものよりも、格段によいことを発見したことを基礎とするものであり、うっ血性心不全等の心臓疾患やＣ型肝炎等の肝臓疾患の改善が期待できる栄養補助食品である。以下、本発明の好適な実施例について詳述する。本発明の実施例は、ゼラチンのカプセル素材の147mgに、ユビキノン(CoQ10)の変質を防ぐためにカプセル着色天然色素としてベニノキ3mgを混入させ、内容物に光りに晒されないようにし、内容物として200mgを封入できるカプセルを作り、このカプセルに本発明の栄養補助食品の200mgを封入した。１カプセル内の200mgの組成は落花生油にユビキノン(CoQ10)を配合した次のような実施例１から４のようなものである。なお、落花生油はカネダ社が生産した標準的な落花生油製品であり、ユビキノンはユビデカレノンあるいは補酸素CoQ-10と呼ばれ、本実施例では日清ファルマ株式会社製のものを使用した。
【０００６】

実施例１	ユビキノン(CoQ10)	20mg	10重量％
	落花生油	180mg	90重量％
	計	200mg	100重量％(１カプセル)

【０００７】

実施例２	ユビキノン(CoQ10)	40mg	20重量％
	落花生(ピーナツ)油	160mg	80重量％
	計	200mg	100重量％

【０００８】

実施例３	ユビキノン(CoQ10)	50mg	25重量％
	落花生油	150mg	75重量％
	計	200mg	100重量％

【０００９】

実施例４	ユビキノン(CoQ10)	60mg	30重量％
	落花生油	140mg	70重量％
	計	200mg	100重量％

【００１０】次に、従来のユビキノン含有栄養補助食品として、実施例1と同じ組成のカプセルに次の組成を封入して、比較例とした。比較例１は、従来より知られている米糠油にユビキノン(CoQ10)を配合したもので、特に、実施例３の対比において試験し、比較例２は実施例の組成のカプセルに米糠だけを封入して比較例２とし、比較例３とともにユビキノン(CoQ10)と落花生油との適正な配合比率を得るために試験した。なお、比較例１の米糠油は、一般的な米国産(NEW FOOD,BLOOMINGALE)の標準的のものであった。
【００１１】

比較例１	ユビキノン(CoQ10)	50mg	25重量％
	米糠油	150mg	75重量％

		計	200mg　100重量％

【００１２】

	比較例２	米糠油	200mg　100重量％

【００１３】

	比較例３	ユビキノン(CoQ10)	70mg　35重量％
		落花生油	130mg　65重量％
		計	200mg　100重量％

【００１４】被験者は、実験志願者の９７名、年齢５６才±７才、内男性４７名、女性５０名で全員が消化系の吸収機能を阻害する疾患はなかった。この９７名を無作為に実施例１の投与グループ10名、実施例２の投与グループ11名、実施例３の投与グループ30名、実施例４の投与グループ10名、比較例１の投与グループ18名、比較例２の投与グループ９名、比較例３の投与グループ９名に分けて前記の実施例、比較例を投与した。第１の投与方法は、短期的に実施例と比較例とを投与して観察したもので、図１の表１に示すように、前記７グループに実施例と比較例とを、食事と一緒に１カプセルを経口投与し、投与１時間後、２時間後、４時間後、６時間後の血液を採取し、被験者の血中のユビキノン(CoQ10)の濃度(mcg/ml)を測定して比較した。

【００１５】第２の投与方法は、比較的長期間に実施例と比較例とを投与して観察したもので、前記７グループに実施例、比較例とを、一日２回、朝と夕の食事と一緒に１カプセルを経口投与し、２週間継続投与の後、１５日目の投与(朝食)６時間後に被験者の血中のユビキノン(CoQ10)の濃度(mcg/ml)を測定して比較した。

【００１６】第１の投与方法の投与後の短期間の経時変化による試験結果を、図１の表１および図２のグラフ１に示して説明する。この実験の結果によると、先ず、実施例３の投与はユビキノン(CoQ10)血中濃度の上昇は、従来の比較例１の米糠油に配合したものより明らかに高く、配合した油と相関関係にあることが判り、更に、驚くことに、比較例１の米糠油に配合のユビキノン50mgと、実施例１の落花生油に配合の20mgとが、６時間後のユビキノン(CoQ10)血中濃度の上昇がほぼ同じであったことである。また、図２に示すように、実施例１の落花生油に配合の20mgのものは、比較例１の米糠油に配合のユビキノン50mgのものに比べて、６時間後ではユビキノンCoQ10血中濃度はほぼ同程度となるが、２時間後および４時間後においては、実施例１のほうが格段に上昇している。なお、６時間以後の数時間は各実施例や比較例はほぼ定常状態が維持された。これらにより、実施例１および実施例３の体内へのユビキノンの吸収効率は、比較例２に対しては勿論、米糠油に配合の比較例１より良いことが判る。

【００１７】この血中濃度の上昇の原因は、二つ考えられる。第１には落花生油の中に微量だが米糠油よりユビキノン(CoQ10)が多く含まれている。第２は、落花生油の中に様々な不飽和脂肪酸、特に、プロスタグランジン類の合成過程に欠かせない物質であるアラキドン酸などの不飽和脂肪酸が多く、これらが体内でいろいろな生理活性物質の合成を促し、生体としては非常に大事な必須脂肪酸（生体自身の合成が不可能であるか合成の量が非常に少ないもの）であるため、肝臓や胃腸機能等の生体機能の増進に関わり、消化吸収機能も高くなって、血中濃度が上昇したものと推定される。このことは、エネルギーを効率よく利用する能力が増すことであると考えられ、結果として体重を減らし易くすることも期待される。

【００１８】第２の投与方法の比較的長期の投与試験結果を、図３の表２および図４のグラフに示して説明する。この実験の結果も、実施例３の投与はユビキノン(CoQ10)血中濃度の上昇は、ユビキノン(CoQ10)が配合されていない比較例２は勿論、従来の米糠油に配合した比較例１より明らかに高いことが解明された。比較例１の米糠油に配合のユビキノン50mgと、実施例１の落花生油に配合の20mgとが、ユビキノン(CoQ10)血中濃度の上昇がほぼ同じであったことである。これにより、実施例３の体内へのユビキノンの吸収効率は、比較例２は勿論、糠配合の比較例１より良いものと推定できる。この血中濃度の上昇の原因も、第１の投与方法と同じであると考えられる。

【００１９】次に、落花生(ピーナツ)油の70～90重量％に、ユビキノンの30～10重量％を含有させた根拠を説明するが、図４のグラフに示すように、実施例１のユビキノンが10重量％の20mgを配合しただけでも、従来の市販されており効果があるとされる比較例１の米糠油に50mgを配合したものと同等程度に上昇し、実施例２のユビキノンの20重量％は1.41mcg/mlと上昇し、実施例３のユビキノンの25重量％は1.57mcg/ml、実施例４のユビキノンの30重量％は1.60mcgと上昇し、その上昇は比較例３でのユビキノンの40重量％において1.61mcg/mlと上昇率は鈍化する。なお、ユビキノンが10重量％の20mg以下ではユビキノンの血中濃度は1.2mcg/ml以下となり効果が期待できない。したがって、高価なユビキノンを配合してカプセルにするに際して、落花生(ピーナツ)油の70～90重量％に、ユビキノンの30～10重量％を含有させればユビキノン(CoQ-10)が効果的に摂取でき、従来の米糠油や大豆油を用いたものよりも全体として安価に製造できるから、経済的に有利な栄養補助食品となる。

【００２０】なお、本発明の特徴を損なうものでなければ、本実施例に限定されるものではないものは勿論であ

る。例えば、本実施例では、落花生油が70～90重量％であるが、その極一部をユビキノン(CoQ-10)の吸収効率を妨げない範囲で、他の成分に変えてもよい。

【００２１】

【発明の効果】以上述べたように、本発明によれば、落花生油に補酵素であるユビキノンを30～10重量％含有させた栄養補助食品としたので、心臓や肝臓および胃腸機能等の生体機能が増進し、消化吸収機能も高くなって、ユビキノン(CoQ-10)が体内に早急に吸収でき、かつ、効果的に体内に摂取できる栄養補助食品となり、経済的に有利な栄養補助食品が得られる。したがって、うっ血性心不全等の心臓疾患やC型肝炎等の肝臓疾患の改善が期待し得る安価な栄養補助食品が得られる。

【図面の簡単な説明】

【図１】本発明の実施例と比較的短期間投与のユビキノン(CoQ-10)の血中濃度の経時的変化を表にした〔表１〕の図である。

【図２】本発明の実施例と比較例の短期間投与結果を示した〔表１〕をグラフにした図である。

【図３】本発明の実施例と比較的長期間投与のユビキノン(CoQ-10)の血中濃度を表にした〔表２〕の図である。

【図４】本発明の実施例と比較例の長期間投与結果を示した〔表２〕をグラフにした図である。

【図１】

表１：ユビキノン(CoQ10)の血中濃度(mcg/ml)の経時変化

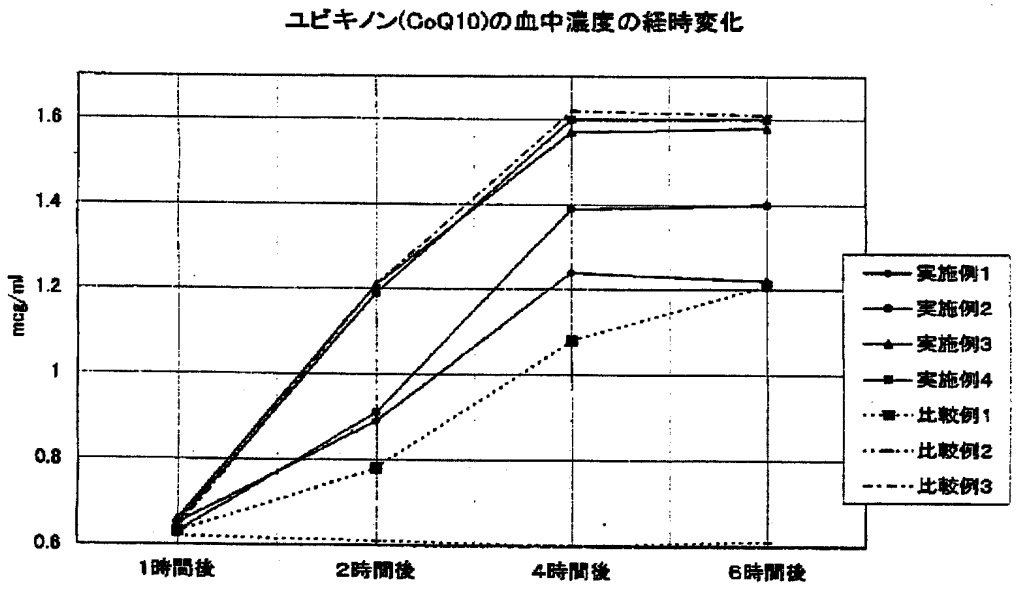
グループ	人数	1時間後	2時間後	4時間後	6時間後
実施例1	10	0.65	0.89	1.24	1.22
実施例2	11	0.63	0.91	1.39	1.40
実施例3	30	0.66	1.21	1.57	1.58
実施例4	10	0.65	1.19	1.60	1.60
比較例1	18	0.63	0.78	1.08	1.21
比較例2	9	0.62	0.61	0.60	0.61
比較例3	9	0.64	1.21	1.62	1.61

【図３】

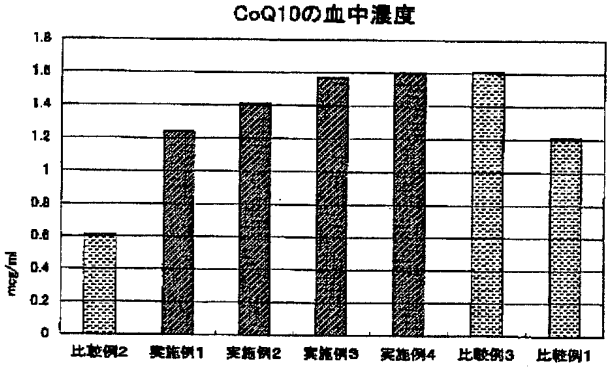
表２：ユビキノン(CoQ10)の血中濃度(100mg/day.14days;n=97)

グループ	人数	投与前(mcg/ml)	投与後(mcg/ml)
比較例2	9	0.62	0.61
実施例1	10	0.65	1.24
実施例2	11	0.63	1.41
実施例3	30	0.66	1.57
実施例4	10	0.65	1.60
比較例3	9	0.64	1.61
比較例1	18	0.63	1.21

【図２】



【図4】


CoQ10の血中濃度
mcg/ml
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
比較例2
実施例1
実施例2
実施例3
実施例4
比較例3
比較例1

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(72)Inventor : MORI MASAO

(54) UBIQUINONE-CONTAINING SUPPLEMENT

(57)Abstract:
PROBLEM TO BE SOLVED: To provide an economically advantageous supplement enabling effective ubiquinone (CoQ-10) intake into the human body, thus hopeful of ameliorating cardiopathy including congestive heart insufficiency and hepatopathy including hepatitis C.
SOLUTION: This supplement is obtained by incorporating 30-10 wt.% of ubiquinone into peanut oil so as to efficiently absorb the ubiquinone as a coenzyme into the human body.

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1]A supplement making peanut oil contain 30 to 10% of the weight of ubiquinone, and making the inside of the body absorb ubiquinone efficiently.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention belongs to the technical field of the supplement containing ubiquinone.
[0002]
[Description of the Prior Art]Ubiquinone is a powerful antioxidant which is mostly contained in blue-skinned fish and is manufactured also by artificial composition.
****** CoQ-10 which is the ubiquinone by which artificial composition was carried out is approved as metabolic cardiotonic by the chemical name of ubidecarenone.
As a supplement containing this ubiquinone supposed that congestive heart failure has an effect conventionally, what contained ubiquinone in rice bran oil or soybean oil is known.
[0003]
[Problem(s) to be Solved by the Invention]however -- combination of a little ubiquinones since the supplement which contained ubiquinone in conventional rice bran oil and soybean oil has expensive ubiquinone (CoQ-10) -- expensive -- not becoming -- it was not economically advantageous, in order to have not obtained but to have taken ingestion of ubiquinone (CoQ-10) enough. This invention was made in view of the above-mentioned problem, and the technical problem, it is a supplement containing ubiquinone, and it can take in inside of the body effectively early, and the improvement of affection of the liver, such as cardiopathy, such as congestive heart failure, and hepatitis C, can expect, and providing an advantageous supplement economically has the absorption to the inside of the body of ubiquinone (CoQ-10).
[0004]
[Means for Solving the Problem]In order to solve the above-mentioned technical problem, this invention is a supplement making peanut oil contain 30 to 10% of the weight of ubiquinone. The operation absorbs efficiently ubiquinone which is a coenzyme inside of the body.
[0005]
[Embodiment of the Invention]boil this invention markedly rather than what the absorption efficiency to the human body of the ubiquinone blended with peanut oil blended with other conventional rice-bran oil -- it is a supplement which is based on having been and having discovered things and can expect the improvement of affection of the liver, such as cardiopathy, such as congestive heart failure, and hepatitis C. Hereafter, the suitable example of this invention is explained in full detail. In order that the example of this invention may prevent deterioration of ubiquinone (CoQ10) to 147 mg of the capsule raw material of gelatin, 3 mg of annattos are made to mix as capsule coloring natural coloring matter, It is made not to be exposed to contents at light, the capsule which can enclose 200 mg as contents was made, and 200 mg of the supplement of this invention was enclosed with this capsule. The presentation of 200 mg in 1 capsule is like the following Examples 1-4 which blended ubiquinone (CoQ10) with peanut oil. Peanut oil was the standard peanut oil products which Kaneda Co., Ltd. produced, and ubiquinone was called ubidecarenone or ****** CoQ-10 and used the thing by NISSHIN PHARMA, INC. in this example.
[0006]

Example 1 10 % of the weight of 20 mg ubiquinones (CoQ10) Peanut oil 180mg 90 % of the weight Total 200mg 100 % of the weight (one capsule)[0007]
Example 2 20 % of the weight of 40 mg ubiquinones (CoQ10) Peanut (peanut) oil 160mg 80 % of the weight Total 200mg 100 % of the weight[0008]
Example 3 25 % of the weight of 50 mg ubiquinones (CoQ10) Peanut oil 150mg 75 % of the weight Total 200mg 100 % of the weight[0009]
Example 4 30 % of the weight of 60 mg ubiquinones (CoQ10) Peanut oil 140mg 70 % of the weight Total 200mg 100 % of the weight[0010]Next, the following presentation was enclosed with the capsule of the same presentation as Example 1 as a conventional ubiquinone content supplement, and it was considered as the comparative example. The comparative example 1 is what blended ubiquinone (CoQ10) with the rice bran oil known conventionally, In particular, it examined in contrast of Example 3, and the comparative example 2 was examined in order to enclose only rice bran with the capsule of a presentation of an example and to obtain the proper rate of a compounding ratio of ubiquinone (CoQ10) and peanut oil with the comparative example 3 as the comparative example 2. Rice bran oil of the comparative example 1 was [made in / general / the U.S. (NEW FOOD, BLOOMINGALE)] standard.
[0011]
Comparative example 1 25 % of the weight of 50 mg ubiquinones (CoQ10) Rice bran oil It is 100 % of the weight a total of 200 mg 75-% of the weight 150 mg.[0012]
Comparative example 2 Rice bran oil 200mg 100 % of the weight[0013]
Comparative example 3 35 % of the weight of 70 mg ubiquinones (CoQ10) Peanut oil 130mg 65 % of the weight Total 200mg 100 % of the weight[0014]There was no disease from which, as for a test subject, all the members prevent the absorption function of a digestive system by 97 experiment applicants, and 56 years old of age **7 years old, 47 inner men and 50 women. At random these 97 persons Ten administration groups of Example 1, 11 administration groups of Example 2, It divided into 30 administration groups of Example 3, ten administration groups of Example 4, 18 administration groups of the comparative example 1, nine administration groups of the comparative example 2, and nine administration groups of the comparative example 3, and the aforementioned example and the comparative example were prescribed for the patient. The 1st medication method is what prescribed for the patient and observed the example and the comparative example in the short term, As shown in Table 1 of drawing 1, one capsule was administered orally to said seven groups for the example and the comparative example together with the meal, the blood 1 hour after administration and of 2 hours, 4 hours, and 6 hours after was extracted in them, and the concentration (mcg/ml) of the ubiquinone (CoQ10) in a test subject's blood was measured and measured with them.
[0015]The 2nd medication method is what prescribed for the patient and observed the example and the comparative example comparatively at the long period of time, One capsule was administered orally to said seven groups for the example and the comparative example together with the meal of two days, a morning, and the evening, and the concentration (mcg/ml) of the ubiquinone (CoQ10) in a test subject's blood was measured and measured two-week continuous administration and 6 hours after the administration (breakfast) on the 15th.
[0016]The test result by aging of the short period of time after administration of the 1st medication method is shown in Table 1 of drawing 1, and the graph 1 of drawing 2, and is explained. According to the result of this experiment, first administration of Example 3 the rise of ubiquinone (CoQIO) blood drug concentration, It is clearly higher than what was blended with rice bran oil of the conventional comparative example 1, and it turns out that it is in the blended oil and correlation, and further for him to be surprised 50 mg of ubiquinone of combination to rice bran oil of the comparative example 1, 20 mg of combination to peanut oil of Example 1 is that the rise of the ubiquinone (CoQIO) blood drug concentration of 6 hours after was almost the same. As shown in drawing 2, the 20-mg thing of combination to peanut oil of Example 1 becomes almost comparable [ubiquinone CoQIO blood drug concentration] in 6 hours compared with the thing of 50 mg of ubiquinone of combination to rice bran oil of the comparative example 1, but. in 2 hours and 4 hours, the way of Example 1 is markedly alike and is going up. As for each example or a comparative example, the stationary state was maintained mostly for several

hours after 6 hour. Of course, these show that the absorption efficiency of the ubiquinone to the inside of the body of Example 1 and Example 3 is better for rice bran oil than the comparative example 1 of combination to the comparative example 2.

[0017]Two causes of a rise of this blood drug concentration are considered. In peanut oil, although it is little, many ubiquinones (CoQIO) are contained from rice bran oil the 1st. As for the 2nd, there is much unsaturated fatty acid, such as various unsaturation ****** and arachidonic acid which is substances indispensable to the synthetic process of prostagladins in particular, in peanut oil, Since these are essential fatty acid (a living body's own composition is impossible, or there is very little composite quantity) very important as a living body which stimulates composition of various physiological active substances in a body, It is concerned with improvement of vital functions, such as liver and a gastroenteric function, a digestion function also becomes high, and that in which blood drug concentration rose is presumed. It is thought that this is that the capability used efficiently increases energy, and also making weight easy to reduce as a result is expected.

[0018]The comparatively long-term administration test result of the 2nd medication method is shown in Table 2 of drawing 3, and the graph of drawing 4, and is explained. The thing high more clearly [the result of this experiment / administration of Example 3] than the comparative example 1 which blended the rise of ubiquinone (CoQIO) blood drug concentration with conventional rice bran oil as well as the comparative example 2 which does not contain ubiquinone (CoQ10) was solved. 20 mg of combination to 50 mg of ubiquinone of combination to rice bran oil of the comparative example 1 and peanut oil of Example 1 is that the rise of ubiquinone (CoQIO) blood drug concentration was almost the same. Thereby, of course, the absorption efficiency of the ubiquinone to the inside of the body of Example 3 can presume the comparative example 2 to be a thing better than the comparative example 1 of rice bran combination. It is thought that the cause of a rise of this blood drug concentration is the same as the 1st medication method.

[0019]Next, although the antecedent basis which made 70 to 90% of the weight of the peanut (peanut) oil contain 30 to 10% of the weight of ubiquinone is explained, As shown in the graph of drawing 4, that the ubiquinone of Example 1 blended 10% of the weight of 20 mg, It goes up to what blended 50 mg with rice bran oil of the comparative example 1 it is supposed that the former is marketed and it is effective of the comparative example, and an equivalent grade, 20% of the weight of the ubiquinone of Example 2 goes up with 1.41 mcg(s)/ml, 30% of the weight of the ubiquinone of 1.57 mcg(s)/ml and Example 4 goes up with 1.60mcg 25% of the weight of the ubiquinone of Example 3, and, in the rise, 1.61 mcg(s)/ml and an increasing rate become slow in 40% of the weight of the ubiquinone in the comparative example 3. As for the blood drug concentration of ubiquinone, ubiquinone is set less than to 1.2 mcg(s)/ml at 10% of the weight of 20 mg or less, and an effect cannot be expected. Therefore, blend expensive ubiquinone and it faces using a capsule, If 70 to 90% of the weight of a peanut (peanut) oil is made to contain 30 to 10% of the weight of ubiquinone, ubiquinone (CoQ-10) can take in effectively, and since it can manufacture more cheaply as a whole than the thing using conventional rice bran oil and soybean oil, it becomes an advantageous supplement economically.

[0020]If the feature of this invention is not spoiled, what is not what is limited to this example is natural. For example, at this example, although peanut oil is 70 to 90 % of the weight, the pole part may be changed into other ingredients in the range which does not bar the absorption efficiency of ubiquinone (CoQ-10).

[0021]

[Effect of the Invention]Since it was considered as the supplement which made peanut oil contain the ubiquinone which is a coenzyme 30 to 10% of the weight according to this invention as stated above, Vital functions, such as the heart, liver, and a gastroenteric function, are increased, a digestion function also becomes high, and ubiquinone (CoQ-10) can absorb immediately inside of the body, and it becomes a supplement which can be taken in inside of the body effectively, and an advantageous supplement is obtained economically. Therefore, the cheap supplement which the improvement of affection of the liver, such as cardiopathy, such as congestive heart failure, and hepatitis C, can expect is obtained.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is a figure of the [Table 1] which made the change with time of the blood drug concentration of the ubiquinone (CoQ-IO) of short administration the example of this invention comparatively in the table.
[Drawing 2]It is the figure which made the graph the [table 1] showing the short administration result of the example and comparative example of this invention.
[Drawing 3]It is a figure of the [Table 2] which made blood drug concentration of the ubiquinone (CoQ-IO) of chronic dosing the example of this invention comparatively in the table.
[Drawing 4]It is the figure which made the graph the [table 2] showing the chronic-dosing result of the example and comparative example of this invention.

[Translation done.]

* NOTICES *

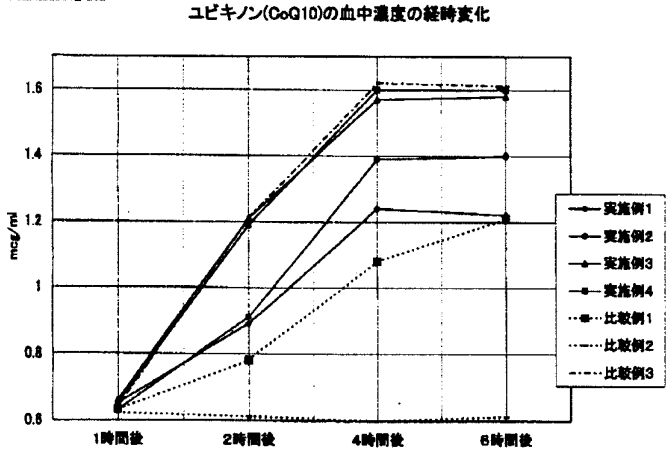
DRAWINGS

[Drawing 1]

表1：ユビキノン(CoQ10)の血中濃度(mcg/ml)の経時変化

グループ	人数	1時間後	2時間後	4時間後	6時間後
実施例1	10	0.65	0.89	1.24	1.22
実施例2	11	0.63	0.91	1.39	1.40
実施例3	30	0.66	1.21	1.57	1.58
実施例4	10	0.65	1.19	1.60	1.60
比較例1	18	0.63	0.78	1.08	1.21
比較例2	9	0.62	0.61	0.60	0.61
比較例3	9	0.64	1.21	1.62	1.61

[Drawing 2]

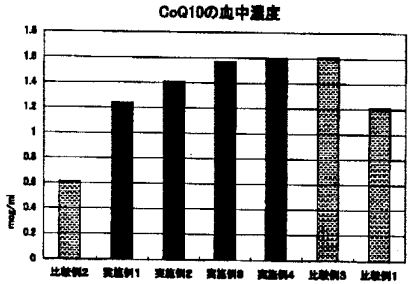


[Drawing 3]

表2:ユビキノン(CoQ10)の血中濃度(100mg/day,14days,n=97)

グループ	人数	投与前(mcg/ml)	投与後(mcg/ml)
比較例2	9	0.62	0.61
実施例1	10	0.65	1.24
実施例2	11	0.63	1.41
実施例3	30	0.66	1.57
実施例4	10	0.65	1.60
比較例3	9	0.64	1.61
比較例1	18	0.63	1.21

[Drawing 4]



[Translation done.]